



STATE OF MAINE
DEPARTMENT OF CONSERVATION
STATE HOUSE STATION 22
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November 7, 1985

Melvyn J. Weiss, Field Representative
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Dear Mel:

A summary of our 1985 insect and disease conditions is attached. As you will find when you look through them, we had the usual number of surprises as well as the normal problems. While most problems are discussed individually, we have begun addressing resource problem groups to a greater degree; especially the conifer plantation and regeneration aspect. I suspect that you will find our work in the future trending more toward these intensive management aspects.

Two of our major insect pests, spruce budworm and gypsy moth, continued to demand a strong commitment even though both have fallen to low population levels. The spruce budworm population has declined to the point where it may soon be necessary to implement alternative methods of survey and assessment. In preparation for such changes we are studying possible modifications of our existing systems, while investigating the additional use of such tools as pheromones and light traps. The gypsy moth, on the other hand, seems to have remained at static levels while fairly rapidly extending its range of distribution to the north and east. Our efforts with this species are presently aimed at mapping these distributional changes, especially as they may affect quarantine procedures.

The surprise for 1985 was our discovery of the extent and severity of the oyster shell scale in forest stands containing beech. This was unexpected and we are still not sure what approach to take with the species.

The major pathological problems continued to be White Pine Blister Rust, European Larch Canker, Scleroderris Canker, and Annosus Root Rot, although work on many other more isolated problems filled out the 1985 season activities. Significant changes involved growing incidence of Annosus Root Rot in young conifer plantations, and increasing problems with Armillaria Root Rot in forest and Christmas tree plantations established on cutover lands formerly occupied by hardwood or mixed growth.

Most of our major problems for 1985 have been summarized on the forms which you provided. Maps are included for most except the spruce budworm. Spruce budworm maps are currently being prepared and you should receive copies directly from Henry Trial as soon as they are ready. A general narrative summary of minor pests has also been prepared for your use.

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I hope that you find the enclosed information adequate. Should you require more detailed information, please feel free to contact me at any time.

Sincerely,

Clark

Clark A. Granger
State Entomologist

CAG:bab
Enclosures

Miscellaneous Insect Condition Summaries for Maine
for the 1985 Season

Alder Flea Beetle, *Altica ambiens* - Alder throughout much of the southern half of the State was browned severely by the feeding of larvae of this species again in 1985. We did observe that damage was more spotty to the south as some older infestations faded while populations were much higher in central portions of the State.

Alder also suffered in some areas from increasing populations of the woolly alder aphid (*Prociphilus tessellatus*) and striped alder sawfly (*Hemichroa crocea*).

Arborvitae (Cedar) Leaf Miner, predominantly *Argyresthia aureoargentella* - Moderate to severe browning of arborvitae (cedar) in Edmunds, Whiting, Cutler, and Lubec in 1985 was found to have been the result of mining by larvae of this small species of moth. Normally this is a more uncommon species of the four affecting arborvitae. The area infested has had a problem of varying severity over the past three or four years, but this season appears to be the worst.

Populations of this and other species throughout the remainder of the State appeared to be up somewhat in 1985.

Balsam Gall Midge, *Paradiplosis tumifex* - Populations of this species appeared to decline again in 1985.

Balsam Twig Aphid, *Mindarus abietinus* - Populations of this species rose again in 1985 with more Christmas tree plantations requiring control than in 1984.

Birch Leafminer (several species) - Early season browning of birch by *Fenus pusilla* appeared to be on the rise in 1985 for the first time in five years although levels are still low. Mid season browning of white birch by *Messa nana* and *Profenusa thomsoni* seemed to rise again in 1985 from 1984 levels.

Browntail Moth, *Euproctis chrysorrhaea* - Surveys were conducted for overwintering webs of the browntail moth caterpillars during the spring of 1984 and spring of 1985. All known current infestations, and several suspect areas, were scouted and the webs were clipped and destroyed. Results are shown below:

<u>Location</u>	<u>Number of Webs Found</u>	
	<u>Spring 84</u>	<u>Spring 85</u>
Vaill Island	383	3,525
House Island	362	355
Seguin Island	1	0
Long Island	0	-
Harpswell (coastal mainland)	0	1 (?)

We plan to revisit these areas again in the spring of 1986 if time permits.

Bruce Spanworm, *Operophtera bruceata* - Populations of the spanworm were evident in northern hardwood stands throughout central and northern Maine in 1985, but defoliation was less obvious. Although light defoliation was evident from the ground in many stands especially in central and far northern Maine our aerial surveys reported no noticeable defoliation in 1985. This is down strikingly from the past (acres of noticeable defoliation in 1983 was 338,000 and it dropped to 214,523 in 1984).

Populations are expected to remain low in 1986.

Conifer Sawflies - Conifer sawflies in general caused little noticeable defoliation in 1985. Only isolated, infested trees and solitary individuals were reported.

Eastern Tent Caterpillar, *Malacosoma americanum* - Tents of this species were very abundant and visible throughout much of the State in 1985. Populations seemed to be up strikingly from 1984 levels.

Fall Webworm, *Hyphantria cunea* - The tents of this species were more noticeable in 1985 than in 1984 in southern Maine and populations seemed to be on the rise for the second consecutive year. Some localized areas of high populations were reported from Brunswick to the south and west.

Fir Problems - The red fir problem which we discussed in our 1984 report seemed to remain fairly constant in 1985 with little noticeable increase in frequency although new trees were evident. We are continuing to monitor this condition which has been reported as "Stilwell's Syndrome" in Canada.

Greenstriped Mapleworm, *Dryocampa rubicunda* - The attractive caterpillars and moths of this species were abundant in the Millinocket area this season and moths were common at Greenbush. Noticeable defoliation of red maple in Millinocket and over about 300 acres in T2 R9 was attributed to this species. Populations appear to be on the rise at least in these areas.

Larch Casebearer, *Coleophora laricella* - Populations of the larch casebearer were locally heavy in a number of areas of central and southern Maine in 1985. Feeding was severe enough to give infested trees a scorched appearance in some stands. This resulted in making them highly visible in June when everything else was green.

Larch Sawfly, *Pristiphora erichsonii* - No reports of larch sawfly activity were received in 1985 indicating continued low population levels.

Oak Leaf-tier (shredder), *Croesia semipurpurana* - Defoliation by this species was generally light again in 1985 although reports of larvae spinning down were more numerous. It appears that populations may be on the rise again and we will be watching for this in 1986.

Pales Weevil, *Hylobius pales* - Beetles originating from Scots pine stumps in the fall of 1984 caused fall feeding damage to 70+% of balsam fir seedlings in an adjacent lot in Searsmont to show up in the spring of 1985. Mortality in approximately 2 acres of the balsam fir was less than 5% overall, but 10-20% mortality occurred in some of the areas nearest the pine stumps. While the pales weevil is common in pine in forest situations, this case was unusual for balsam fir Christmas tree plantings in Maine.

Pine Spittlebug, *Aphrophora parallela* - Spittle masses containing nymphs of this species were very abundant on various conifers, especially Scots and white pines, in June of 1985. Although locally heavy, no damage was noticed or control conducted. Populations were up in 1985 over 1984 levels.

Regeneration Problems - Predicted shortages of wood supply have generated a more intensive management approach to natural regeneration and increased outplanting of seedlings to supplement areas with inadequate levels of natural regeneration. No reports of extensive damage have been reported to date with the exception of *Hylobius* spp. These regeneration weevils have caused significant damage in the past, however, no large areas of current damage were seen in 1985. Surveys for this insect have been in scattered locations and not intensive enough to be sure no damage occurred this year. A potential problem is white pine weevil (*Pissodes strobi*) attack on black spruce. This was noted in several areas in Maine and with the current use of black spruce for reforestation in many areas work should begin to address this problem. Shoestring Root Rot (*Armillaria mellea*) caused some mortality in the Telos area to spruce and again may become a significant problem in the future.

Saddled Prominent Complex, *Heterocampa* spp. - Although no noticeable defoliation by this group of species was reported in 1985 we did record more moths than in 1984. We will continue to monitor the species.

Saratoga Spittlebug, *Aphrophora saratogensis* - We had no reports of damage by this species in 1985 although we did not monitor the problem very closely.

White Pine Weevil, *Pissodes strobi* - With the increasing demand for information on insect pests in plantation situations has come the need to establish general and specific survey methods. In 1984 we started a general survey for white pine weevil relating numbers of weeviled to healthy leaders in plantations (primarily). A series of 33 plots were selected in 1984 which were scattered throughout the southern half of the State. All but 3 of these were revisited in 1985. An additional 15 plots were set up in 1985 of which 3 were in northern Maine (see Fig. 1). In all plots the number of trees out of a sample of 50 showing current weeviling was recorded. Surveys were made between mid-August and mid-October. The results are as follows:

<u>Area</u>	<u>No. Plots</u>	<u>Ave. No. Weeviled/ 50 Trees (Range)</u>	<u>% Weeviled</u>
SW -1984	15	10 (3-28)	20
1985	22	10.5 (2-20)	21
**WC -1984	13	6.4 (1-15)	13
1985	14	7.9 (0-27)	16
***E -1984	5	6 (1-20)	12
1985	9	16.2 (7-33)	32
*****N -1984	0	0	0
1985	3	0	0

Averages	1984	-	7.5
	1985	-	8.6

- *SW - South West - That area south of rte. 2 from Bangor to Gilead and west of the Penobscot River.
- **WC - West Central - North of rte. 2 from Bangor to Gilead and west of the Penobscot River.
- ****E - East - East of the Penobscot River and south of rte. 9 from Bangor to Calais.
- *****N - Aroostook County

These figures indicate that weevil damage was up in all zones which were monitored for both years. The most significant rise was in eastern Maine. To see what effect the new plots had on these figures, we revisited most of the 1984 plantations. The results were:

<u>Area</u>	<u>Comments</u>
SW	Out of the 15 original plots we revisited 13. The average number of weeviled leaders/50 trees was 10.7 in 1985 (= 21%).
WC	Out of the 13 original plots we revisited 12. The average number of weeviled leaders/50 trees was 6.1 or 12%.
E	Out of the 5 original plots we revisited 5. The average number of weeviled leaders/50 trees was 17.4 or 35%.

These figures compare favorably with the preceding complete table. We will continue to monitor these plots in 1986.

Yellow-headed Spruce Sawfly, *Pikonema alaskensis* - Populations of this species seemed to drop again in 1985 with no reports received of damage.

Miscellaneous - Insect activity seemed to run later in the season in 1985 than normal even though spring development was not unusual. Moth activity for many species was spread out as much as two weeks longer into the season.

A List of the Lepidoptera of Maine Part 2 - The Microlepidoptera Section 2 Cosmopterigidae through Hepialidae by A.E. Brower. Tech. Bull. 114 of the University of Maine. A joint publication of the Maine Dept. of Conserv. and the Dept. of Entomology, Orono. 70 pp. August, 1984: This publication is now available. This bulletin completes the Lepidoptera of Maine summarizing records collected by Dr. Brower during his career as a professional entomologist in Maine.

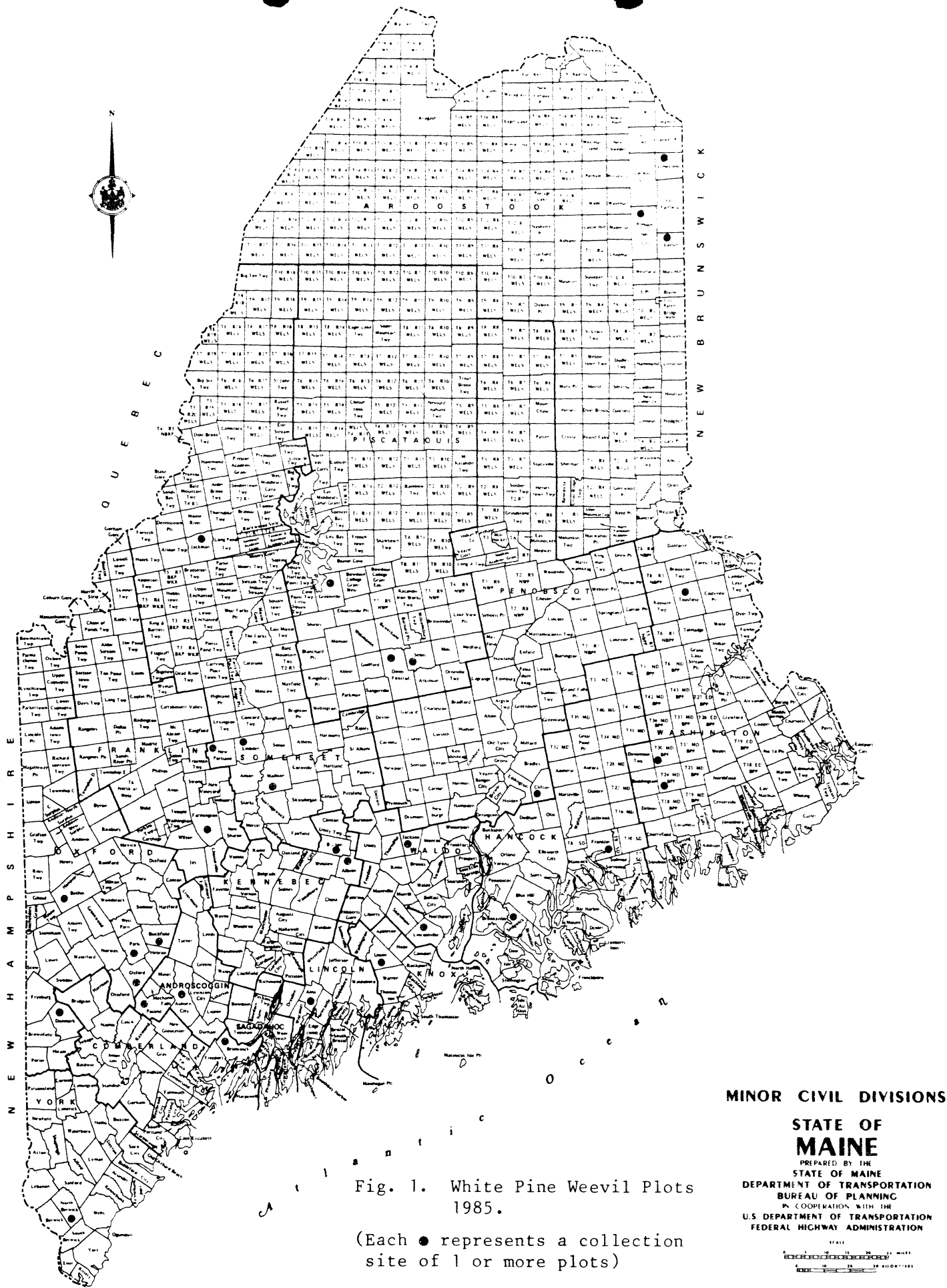


Fig. 1. White Pine Weevil Plots
1985.

(Each ● represents a collection
site of 1 or more plots)

MINOR CIVIL DIVISIONS

STATE OF
MAINE

PREPARED BY THE
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE
0 10 20 30 MILES
0 10 20 30 KILOMETERS

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Budworm

(SPECIFIC NAME): Choristoneura fumiferana

HOST: Balsam Fir, White, Red and Black Spruce, Hemlock

PRESENT CONDITION:

AREA (TOTAL ACRES): 4.8 million acres

LOCATION: Northern 2/3 of Maine with heaviest infestation in the southeast and westcentral areas

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

.7 million acres moderate (30 to 50%)
.5 million acres heavy to severe (51%+)

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): 300,000 acres of 100+ acre patches of fir mortality (greater than 50% dead) scattered mortality (10%) on additional 700,000 acres

TREND:

PAST TO PRESENT: Populations and damage were down sharply again in 1985

FUTURE: 1985 surveys predict a significant decline in the area expected to have moderate to high populations (.6 million acres predicted for 1986).

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

A control program of from 35,000 to 70,000 acres is expected in 1986 using Bt and chemical insecticides. A total of 415,000 acres were treated in 1985 with Thuricide 48LV and Zectran. Results with Zectan materials were excellent, but results with Thuricide were erratic.

Light trap catches of spruce budworm moths continued their decline in 1985 falling to the lowest levels since 1970. Moth activity began somewhat (about 5 days) later in 1984 and extended into August.

Pheromone trapping for moths was also conducted in 1985 with poor results due to problems with the lure and killing agent. Pheromone trapping will be conducted again in 1986 with improved initial quality control.

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Coneworm

(SPECIFIC NAME): Dioryctria reniculelloides

HOST: Red & Black Spruce

PRESENT CONDITION: Found generally throughout the portion of Maine infested with Spruce Budworm.

AREA (TOTAL ACRES): 4.8 million acres

LOCATION: Entire northern 2/3 of Maine but most significant in the northwest and southeast

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Light to moderate defoliation (10 to 30% defoliation) on approximately 200,000 acres.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): Damage too closely associated with spruce budworm to separate damage.

TREND:

PAST TO PRESENT: Populations declined in 1984 and 1985 from very high levels in 1983. Larvae were much less common in F.I.S. field collections in 1985 as compared to 1984.

FUTURE: Counts of overwintering larvae in 1985 showed a population decline statewide similar to population decline noted for spruce budworm report. Moth catches in our light traps in 1985 were down over 85% from 1984 levels indicating further population declines in larval populations for 1986.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Areas treated for budworm in 1986 will certainly contain populations of *Dioryctria*.

COMMENTS: Efforts to improve survey methods were undertaken in 1985. Results of this study will be published in 1986.

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Gypsy Moth

(SPECIFIC NAME): Lymantria dispar

HOST: Red oak, poplar, gray birch

PRESENT CONDITION:

AREA (TOTAL ACRES): 10,249

LOCATION: Southern Penobscot and NW Hancock Co.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR
INFECTION; DEFINE CLASSES): 3,551 ac < 30% defol; 5,461 ac 30-60%,
1,237 ac > 60%

No noticeable defoliation in previously heavily defoliated area in
southern ½ of Maine.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR
\$ ESTIMATES): Entomology Division personnel are presently
surveying and evaluating crown condition and tree mortality after various
levels of cumulative heavy defoliation from 1978-83. (see comments)

TREND:

PAST TO PRESENT: Current defoliation, although still restricted to the
northern edge of the infestation appears to be healthy. New areas of
viable infestation have been found outside the quarantine zone. Within
the southern 1/3 of the state populations are still stable at endemic levels.

FUTURE:

Expect further expansion of the northern area of infestation. Current
increases in SE Mass. and Conn. suggest that populations may resurge in
Southern Maine within a few years.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

None conducted or contemplated

COMMENTS:

Preliminary data:

# yr. Cum. Heavy Defoliation	0	1	2	3	4
% ba dead 1984	1.3	3.2	14.3	12.5	14.1
1985	2.4	4.2	15.6	13.0	16.2

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1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Forest Tent Caterpillar

(SPECIFIC NAME): Malacosoma disstria

HOST: Primarily poplar

PRESENT CONDITION:

AREA (TOTAL ACRES): No known areas of noticeable defoliation

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR
INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR
\$ ESTIMATES):

Based on annual reevaluation of poplar stands defoliated between 1979 and 1983 in Northern and Western Maine; approximately 10% of D/Co ba is dead and an additional 10% has more than 1/3 of crown dead. This appears to be a significant increase from 1984. Hypoxylon canker is associated with dead and weakened trees, and appears to be more common than in the past. Data haven't

TREND: been stratified for cumulative defoliation history.

PAST TO PRESENT: Static at endemic levels from 1984 to 1985.

FUTURE: No immediate change. Light trap catch indicates possible increase in SW Maine, but are still at low levels.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

None

COMMENTS:

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

(COMMON NAME): Oystershell Scale

(SPECIFIC NAME): Lepidosaphes ulmi

: Primarily beech. Also occurring on sugar maple, white ash, yellow birch, white birch.

PRESENT CONDITION:

AREA (TOTAL ACRES): Approximately 500 acres of severe damage. Noticeable damage and elevated (?) scale populations 100+ twps.

LOCATION:

(see map) Beech/Sugar Maple/Yellow Birch type across southern ½ of state

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR

INFECTION; DEFINE CLASSES): 500+ acres of top dieback, tip mortality, understory mortality. Scale - induced flagging of branch tops apparent in approximately 100 towns.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES):

Plots being established.

NO:

PAST TO PRESENT: 1st year of investigation so baseline levels are unknown, appears to be increasing.

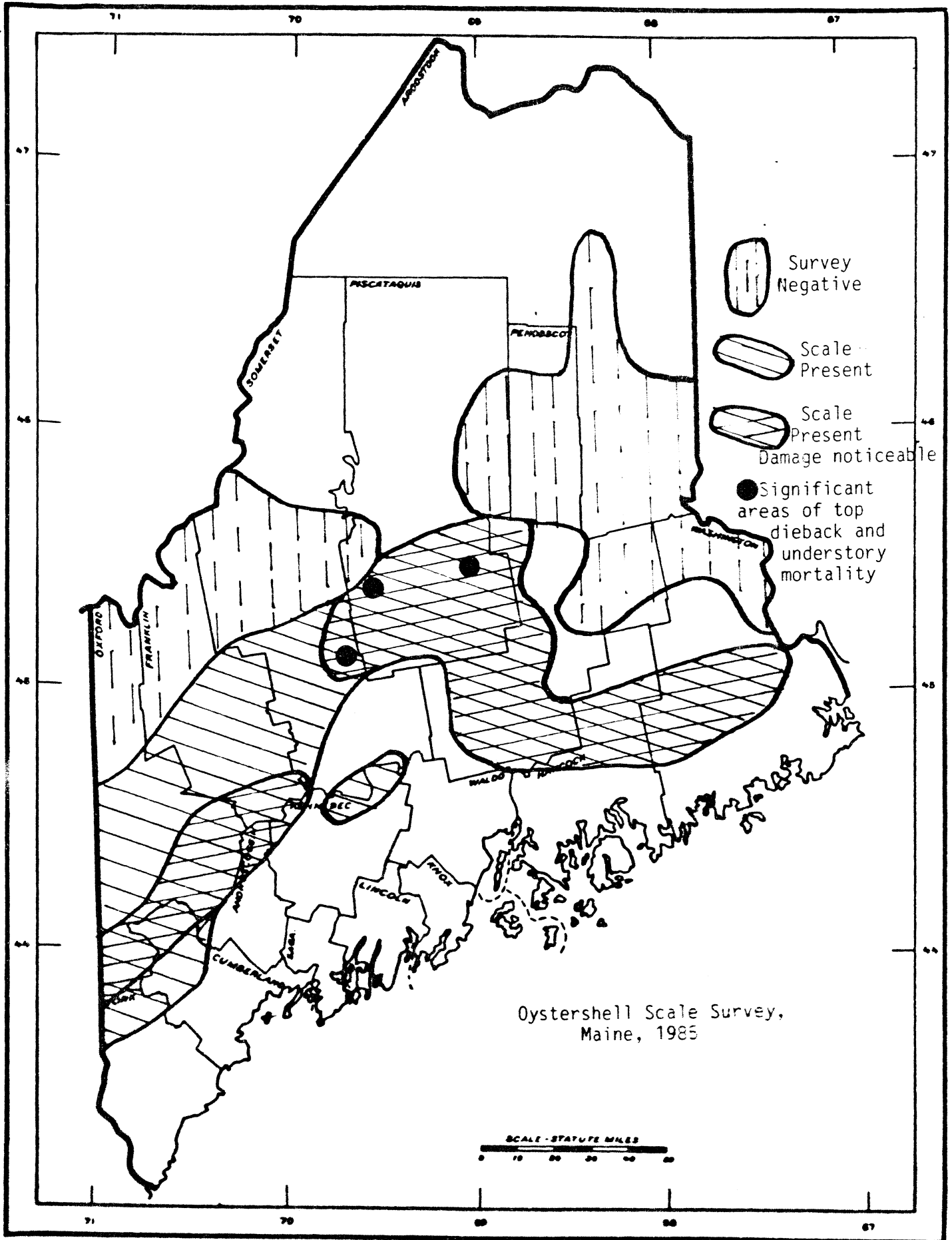
FUTURE:

Unknown.

PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

REMARKS:

MAINE



STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Larch decline/bark beetle

(SPECIFIC NAME): Dendroctonus simplex and unknown predisposing factor(s)

HOST: Tamarack

PRESENT CONDITION:

AREA (TOTAL ACRES): Areas of unexplained mortality scattered throughout state.

LOCATION: Scattered - Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Varies between areas from 10-20% to 90-100% larch mortality within individual stands.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): No values ascertained statewide. Changes in stand condition on the monitored stands are shown below:

	Variable	1984	1985
TREND:	Mortality	10.8%	14.7%
	Bark beetle exit holes	15.2%	24.0%
	Pitching	17.2%	70.7%
	Index of condition*	3.50%	3.21%

PAST TO PRESENT:

Damage is continuing to accrue. Based on pitching symptoms on previously unsymptomatic trees, bark beetle populations appear to be increasing.

FUTURE: Not certain, but no sign of immediate collapse. The heavy incidence of pitching indicates increased beetle activity. If colonization is successful, a large proportion of the affected stands will die.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

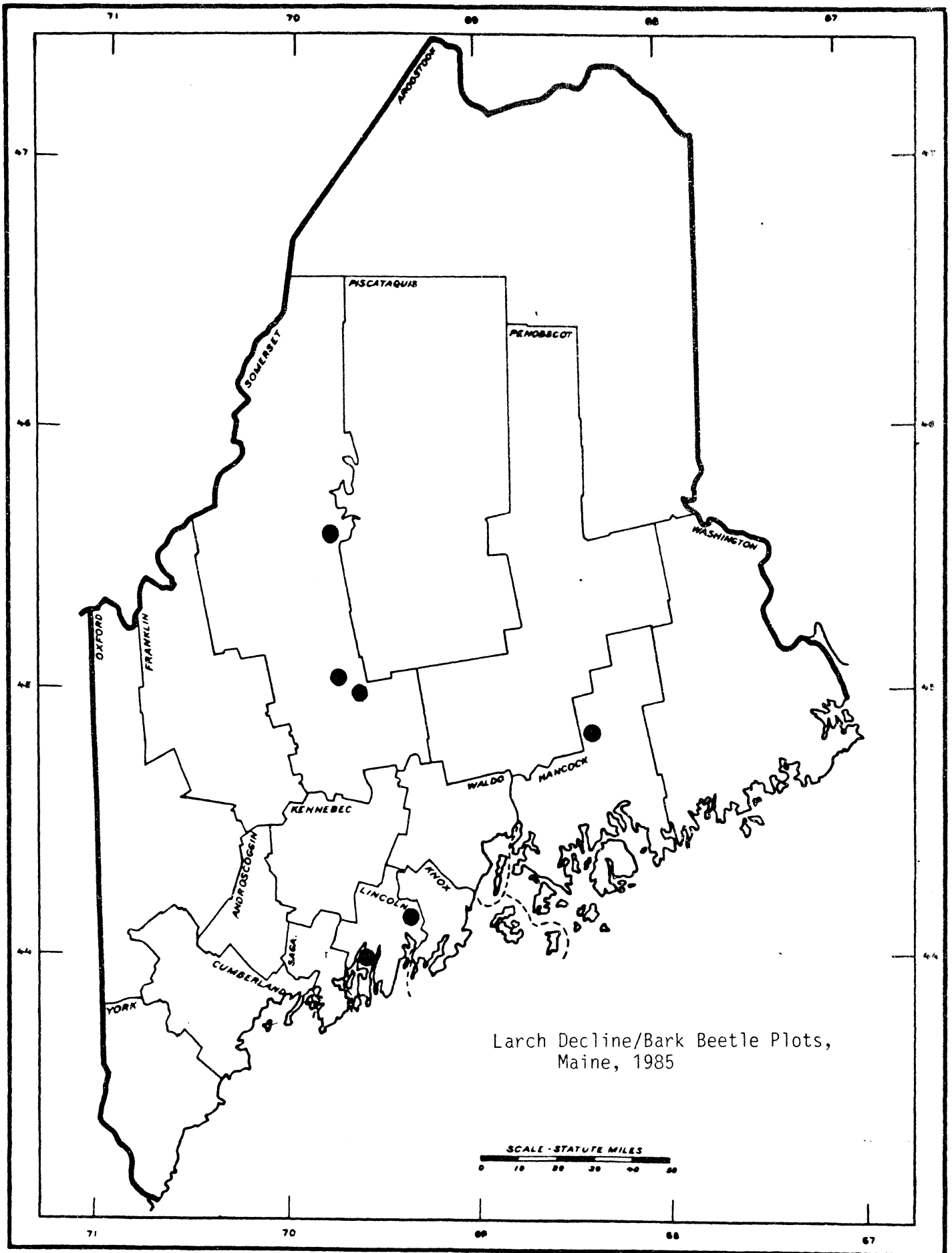
None anticipated

COMMENTS:

* - Index of condition is an average based on the following weights assigned to condition.

dead = 0
very poor = 1
poor = 2
fair = 3
good = 4

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STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Birch casebearer

(SPECIFIC NAME): Coleophora serratella

HOST: Primarily white birch

PRESENT CONDITION:

AREA (TOTAL ACRES): Heavy defoliation noted only in extreme SE Maine scattered over 37,000 acres. Endemic populations noted elsewhere in state.

LOCATION: SE Washington County

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Heavy (51-75) defoliation on 37,000 acres.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): No measurements of current area. Current measurements of 193,000 acres of heavy 1983 defoliation show a 4 fold increase in top dieback and in dead - moribund trees. See attached table.

TREND:

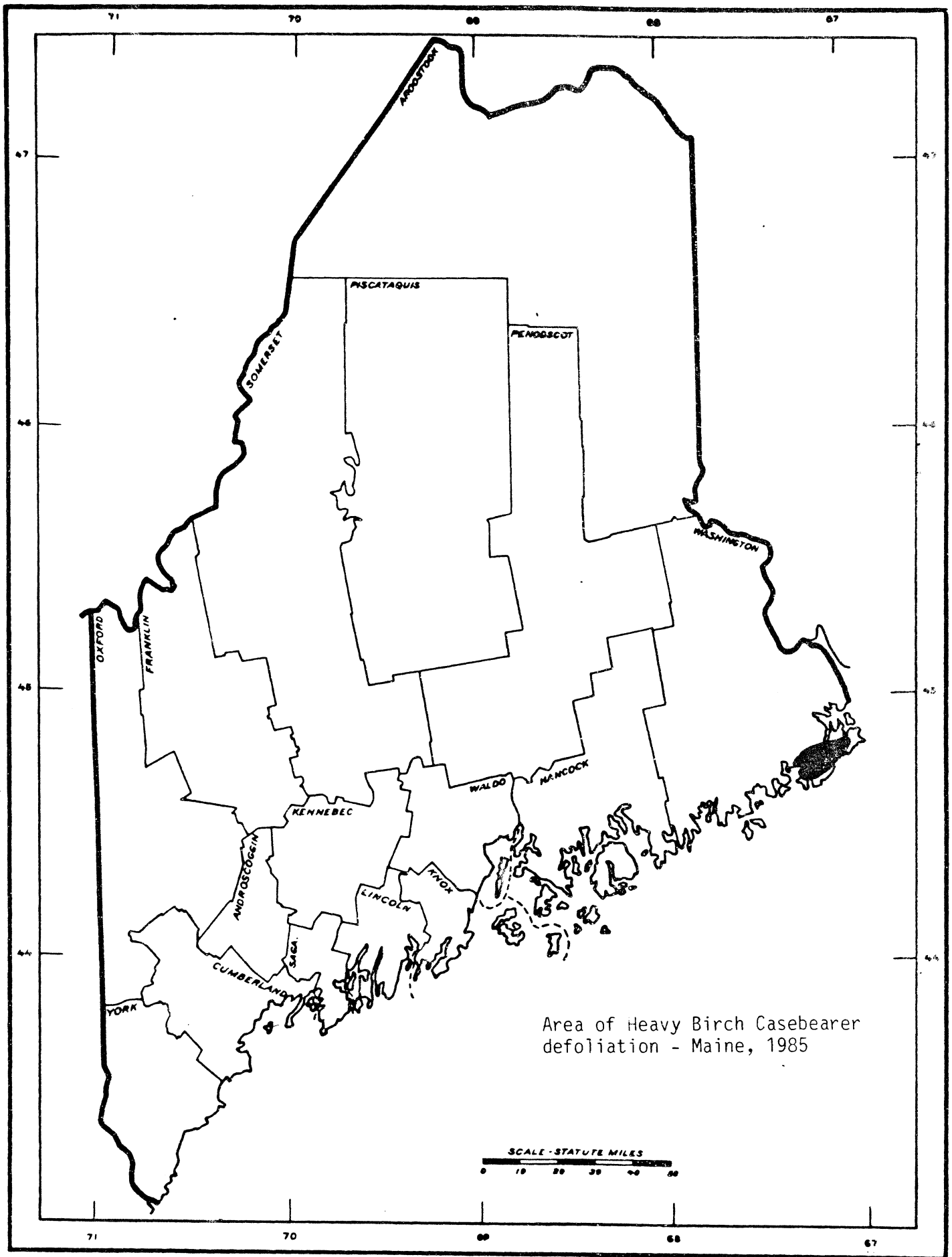
PAST TO PRESENT: Stable or decreasing populations over most of the birch type. Increasing in extreme SE Washington County.

FUTURE: Unknown. Population prediction surveys to be taken this winter. No major increase expected.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: The area of infestation in SE Washington County coincides quite closely with the area of heavy infestation of the arborvitae Leafminer *Argyresthia aureoargentella*. The area consists of very poor growing conditions as well.

MAINE



Tree Condition in Birch Evaluation Plots, Comparative Values, Winter
1984-85

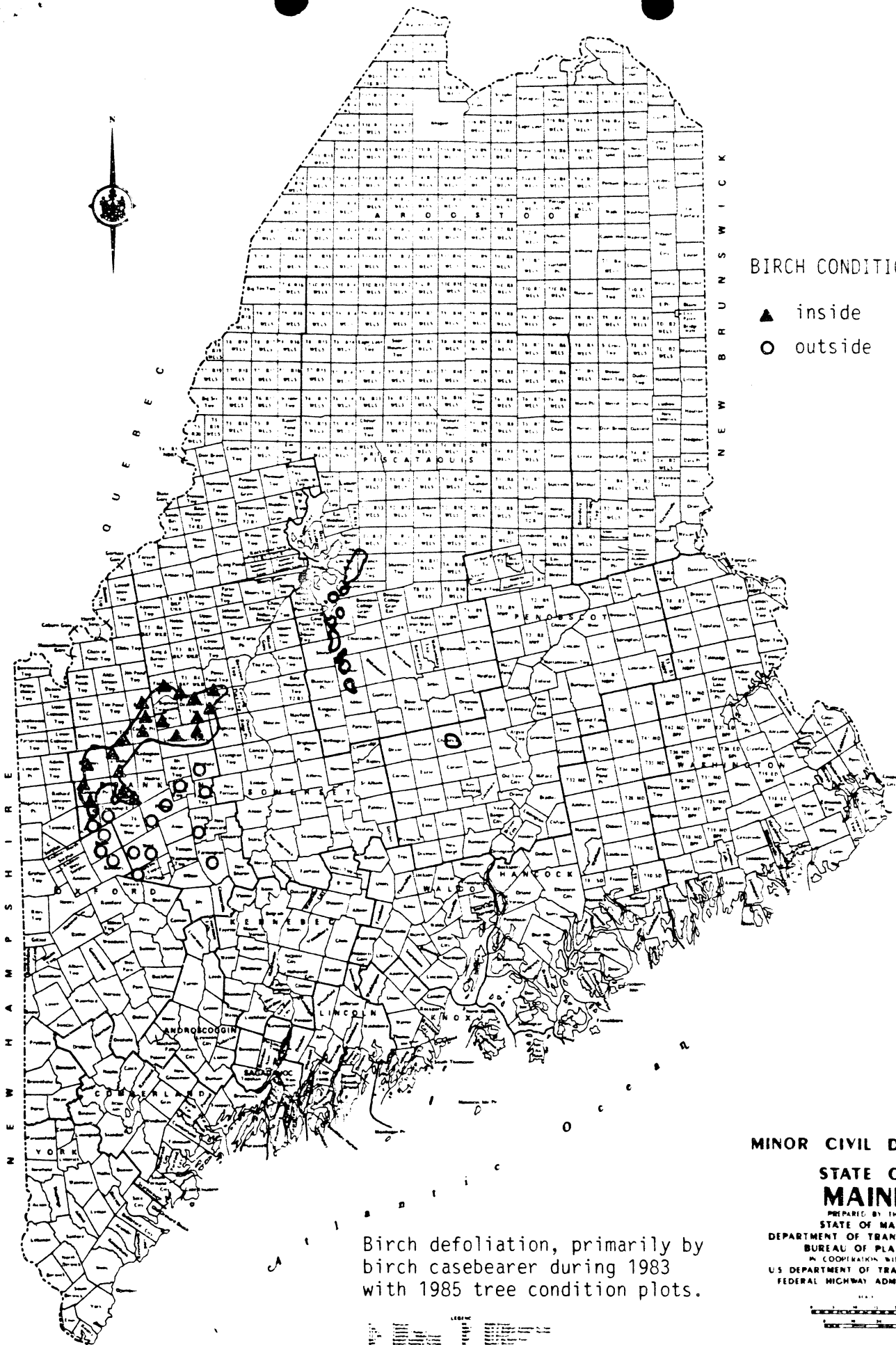
Attributes	Area of Contiguous Heavy Defoliation - 1983	Area of Scattered Defoliation - 1983
Stocking		
Average total basal area .	155 sq. ft.	173 sq. ft.
Average D/Co basal area	105 sq. ft.	108 sq. ft.
% of total basal area which is W. Birch	58%	56%
% of D/Co basal area which is W. Birch	72%	68%
Tree Condition - D/Co W. Birch		
% healthy	69%	93%
% with top dieback	22%	5%
% moribund	4%	.4%
% recent dead	1%	.4%
% snags	3%	1.2%



NEW BRUNSWICK

BIRCH CONDITION PLOTS

- ▲ inside
- outside



MINOR CIVIL DIVISIONS

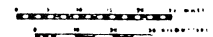
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FEDERAL HIGHWAY ADMINISTRATION

Birch defoliation, primarily by
birch casebearer during 1983
with 1985 tree condition plots.

LEGEND

▲	inside
○	outside



STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Satin Moth

(SPECIFIC NAME): Leucoma salicis

HOST: Primarily poplar

PRESENT CONDITION:

AREA (TOTAL ACRES): No major areas - scattered individual symptomatic trees.

LOCATION: Coastal Washington County Jonesboro - Whitneyville

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR
INFECTION; DEFINE CLASSES): 30-60% defoliation showing on individual
trees.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR
\$ ESTIMATES): No specific survey conducted. Twig and branch
mortality common in big toothed aspen which were previously
heavily defoliated.

TREND:

PAST TO PRESENT: Population subsiding

FUTURE: Continued subsidence expected

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

None conducted.

COMMENTS:

STATE OF MAINE

1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Shoestring Root Rot

(SPECIFIC NAME): *Armillariella* = *Armillaria mellea*

HOST: Numerous coniferous and hardwood hosts

PRESENT CONDITION: General distribution throughout state

AREA (TOTAL ACRES): Omnipresent

LOCATION: Statewide

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Causing clumped or scattered mortality in Christmas tree and coniferous plantations established on cutover stands formerly occupied by hardwood or mixed growth. Is also involved in larch decline and mortality of stressed trees; e.g., heavy spruce budworm defoliation and balsam woolly aphid.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): In Norridgewock, one Christmas tree plantation owner has already lost about \$3,000 in killed trees (\$15/tree; 200 trees) and an undetermined number degraded. Presently, healthy-appearing trees are planned for 1985 sales, when they should have stayed on the stump for 1 or 2 more years.

TREND: An increase is anticipated where type conversion takes place on formerly hardwood or mixed stands.

PAST TO PRESENT: Always present, but of increased occurrence in recent years.

FUTURE: Unless stump removal is practiced, plantation losses resulting from this disease will be substantial.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Participated in the establishment of a treatment plot using a chelated compound alledged to restrict rhizomorph development (with Houston & Wargo).

COMMENTS: Except for the Norridgewock situation, we have little impact data at present, but have several verbal reports that similar mortality is being experienced in other large scale, type conversion plantations. This does not appear to be a problem when conifer plantations are established on old field situations lacking woody debris or stumps in the soil.

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Ash Leaf Rust

(SPECIFIC NAME): *Puccinia sparganioides*

HOST: Ash species, *Fraxinus* spp.

PRESENT CONDITION: The epidemic coastal situation appears to be subsiding.

AREA (TOTAL ACRES): A rough estimate of 3,000 acres

LOCATION: From Belfast south along the coast to Kittery.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Heavy attack (6-8+ aecial pustules per leaflet) occurred on approximately 800 acres. Arrowsic, Yarmouth, and Kittery/Elliott were the hardest hit areas.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): Timber loss probably amounted to 100+ cords. Shade tree loss, especially in the built-up section of coastal Yarmouth was locally extensive.

TREND: Decreasing

PAST TO PRESENT: This is the first year after 3 years of heavy damage that the disease has reduced in intensity.

FUTURE: Overwintering inoculum on salt marsh grass (*Spartina* spp.) is very light in all areas examined.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): No control projects conducted; however, an impact study plot was set up in Arrowsic this fall, data to be taken next spring on mortality, dieback.

COMMENTS: Providing we have a normal spring without excessive rainfall or high humidity, I would expect the epidemic situation that existed over the past 4 years to collapse.

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1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): European Larch Canker

(SPECIFIC NAME): *Lachnellula willkommii*

HOST: Eastern larch, *Larix laricina*

PRESENT CONDITION: Area of infestation is clearly defined.

AREA (TOTAL ACRES): 6,500 acres of larch are infested at the present time.

LOCATION: Lincoln, Knox, Waldo, Hancock, and Washington Counties.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): An estimated 1,500 acres are heavily infested (contain stem and branch cankers); the remaining 5,000 acres contain only branch cankers.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): Total loss to date probably does not exceed 5,000 bd. ft. Some of this volume would have died from suppression anyway.

TREND: A slowly increasing trend is expected.

PAST TO PRESENT: The disease has been in Maine in excess of 15 years. Spread has been rather rapid, therefore.

FUTURE: Since the more dense areas of the larch resource are already infested, rate of spread should diminish as the disease moves into more scattered stands.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Quarantines (State and Federal) are being implemented.

COMMENTS: Survey activity by both Maine Forest Service and APHIS personnel was greatly facilitated by the MAG CIR aerial photo data and maps produced from them. From this information, it was determined that we have approximately 22,867 acres of larch in a 30 mile coastal band. Efficiency was greatly improved by the ability to survey for ELC at very specific, known stands of larch.

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Scleroderris Canker

(SPECIFIC NAME): *Gremmeniella abietina*

HOST: Red Pine, *Pinus resinosa*

PRESENT CONDITION: Stabilized

AREA (TOTAL ACRES): Approximately 50 acres.

LOCATION: Townships of Eustis, Coplin Plantation, Aurora and T19 MD.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR
INFECTION; DEFINE CLASSES): Where present, latent infections
have produced only a very occasional flagging branch.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR
\$ ESTIMATES): Insignificant loss in 1985

TREND: Stabilization

PAST TO PRESENT: Four infection sites were found within a few years in
the past. No new sites found for several years.

FUTURE: If each state takes care of current infection in a rapid, efficient
manner using Bergdal's control recommendation, these organisms should cease
to be a problem.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Re-sanitation of existing
4 sites on 50 acres. Approximately 10 man days were involved which included scouting
time and extensive travel time.

COMMENTS: Early detection and prompt control action, low pruning preventive action,
and disease-free seedling source should relegate this disease to insignificant sta-
tus, providing there is regional cooperation in control effort.

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): White Pine Blister Rust

(SPECIFIC NAME): *Cronartium ribicola*

HOST: Eastern White Pine, *Pinus strobus*

PRESENT CONDITION: Under control in areas surveyed.

AREA (TOTAL ACRES): Over 1,861,000 acres of control area; 923,000 of white pine.

LOCATION: 1985 survey work for Ribes eradication was accomplished on 17 towns in the southern $\frac{1}{2}$ of the State.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Light or no infection on lands which historically have had a continuing program. Isolated areas with only recent survey activity or lacking in cooperation in the past occasionally experience heavy mortality.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): No special effort has been made to determine impact, since we know if we have a viable program, impact will be negligible.

TREND:

PAST TO PRESENT: From extremely heavy losses in the past to acceptable loss at present. Extreme losses early in the history of the disease were influenced at least in part, by presence of *R. nigrum*.

FUTURE: With continued present level of funding, we will barely maintain the high level of control presently achieved. Mechanization of logging operations; e.g., biomass operations, may result in increased Ribes incidence.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Scouting (Ribes Survey Acres) amounted to 65,461 acres in 17 towns, with 17,224 isolated Ribes destroyed. Total scouting cost was \$26,037.

COMMENTS: When viewed without political consideration, our Blister Rust program is probably the most cost-effective program in the Bureau of Forestry due to the high level of control acreage now on maintenance. More intensive management, increased mechanization, and on-site processing will result in more openings and an expected increase in Ribes counts. Now is the time to hold onto what it has taken so many years to accomplish; i.e., a high percentage of the control area on maintenance at low cost.

STATE OF MAINE
1985 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Annosus Root Rot

(SPECIFIC NAME): *Heterobasidion annosum* = *Fomes annosus*

HOST: Red Pine, *Pinus resinosa*

PRESENT CONDITION: Four new sites located in 1985

AREA (TOTAL ACRES): Approximately 30 acres

LOCATION: Towns of Belfast, Cumberland, Monroe, and Palermo

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Each site had an average of 1,000 bd.ft. of trees dead moribund, or with incipient symptoms.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR \$ ESTIMATES): Total of approximately 3,500 bd.ft. (This is for the 4 new sites only).

TREND: Increasing

PAST TO PRESENT: From a rare site 30 years ago, there are now numerous infection sites scattered mostly in central, western, and southern Maine.

FUTURE: An expected geometric progression is predicted as more intensive management (more frequent thinnings) occurs, and more young plantations reach thinning size.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): I am recommending Borax treatment of stumps immediately following severance of the stem.

COMMENTS: Stump treatment is not meeting with overwhelming acceptance in spite of proven positive results. S.D. Warren is not treating stumps in an old Annosus Root Rot site in Parsonsfield, and, according to the forester, losses have not been excessive. When time permits, impact data will be collected.

The problem of stump treatment in feller/buncher/grapple skidder operations has yet to be resolved (at least a determination whether or not treatment is necessary)

Rhizosphaera Needle Cast, *Rhizosphaera kalkhoffii* - As we look closer at blue spruce, we are seeing more of this disease; however, it has not caused severe defoliation as it did a few years ago. It is generally distributed throughout the southern 1/2 of the state.

Dutch Elm Disease, *Ceratocystis ulmi* - Heavy mortality occurred to residual trees left after previous onslaughts of the disease. Only isolated trees, separated by long distances from infected trees, or under intensive management remain unaffected.

Rotary mower Damage - Small rocks which were picked up by a tractor-drawn rotary mower and flung against larch sapling stems in a superior tree orchard caused basal stem bruises of varying sizes.

Plantation Establishment Problems - Causes for poor survival included mouse damage, planting too deep, J-roots and faulty functioning of tree planter packer wheels; i.e., planting perpendicular to slope resulting in improper slit closure. (See also Armillaria Root Rot in clearcut areas planted to conifers).

Herbicide Spray Drift Damage - In Fort Fairfield, severe browning in a pole-sized red pine plantation occurred following Diquat application to adjacent potato fields.

Fumigation Damage - White pine 3-0 and 4-0 seedlings were browned following Vapam injection adjacent to them. Following injection, the soil immediately was rolled, but did not receive a water seal until several days later.

Botrytis Gray Mold Blight, *Botrytis cinerea* - Greenhouse tubelings of black spruce and white pine contained heavy terminal and lower stem infections by this disease. Humidity levels were excessive and deemed a contributing factor.

Fir-Fern Rust, *Uredinopsis mirabilis* - Incidence and intensity of attack has subsided this year, but is still present in light infestations in several Christmas tree plantations. Many growers have controlled sensitive fern near fir with Roundup or Asulox.

Douglas-fir Needlecast, *Rhabdocline pseudotsugae/Phaeocryptopus gaumannii* - These needlecasts are increasing in intensity and incidence, and causes the future growing of this species without accompanying intensive control measures a questionable proposition at best.

White Pine Resinosis - Severe mid-crown resinosis of mature white pines, particularly from the main stem, was diagnosed as being caused by a combination of old attack by the *Matsucoccus macrocitrices/Septobasidium pinicola* complex, and superficial bark cankers caused by *Caliciopsis pinicola*. Felling breakage (brittle stems) were evidently caused by incipient decay caused by *Phellinus = Fomes pini*. Faulty management; i.e., failure to maintain full crowns through overstocking, was deemed the underlying cause for both problems in this stand.

Dwarf Mistletoe, *Arceuthobium pusillum* - A request for control information was supplied a group of homeowners on Monhegan Island. Options included stand and individual tree sanitation measures.

Fusarium Root Rot of Conifer Nursery Seedlings, *Fusarium oxysporum* - This root rot is becoming more commonplace simply because more intensive study of nursery root problems is taking place.

Pine-Pine Rust, *Endocronartium harknessii* - Differential susceptibility was observed in a windrow of 25 foot high Scots pine in Norridgewock. Heavily-infected trees had galls up to golf ball size, with some branch mortality occurring. Also observed on Scots pine in Corea.

Mound Ant Injury - Red mound ants were responsible for girdled stems on scattered jack pine in a large T19 MD plantation. Some white pine weevil injury was also in evidence on this pine species.

Beech Nectria, *Nectria coccinia* var *faginata* (?) - No intensive survey activity to determine distribution of this organism has been made; however, a collection was made in Waterville (with Drs. Houston and Wargo) and good collection areas were located in Brownville on the Lakeview Road, in Mayfield, on Rt. 16, 0.3 mile west of the Kingsbury town line, and along Rt. 11, north of Brownville in T5 R9. More intensive survey activity should reveal statewide distribution.

Naemacyclus Needle Cast, *Naemacyclus minor* - This disease was tentatively identified on Scots pine needles in Corea and had an associated infestation of *Lophodermium pinastri*. Another infestation was identified on Scots pine in the town of Dover.

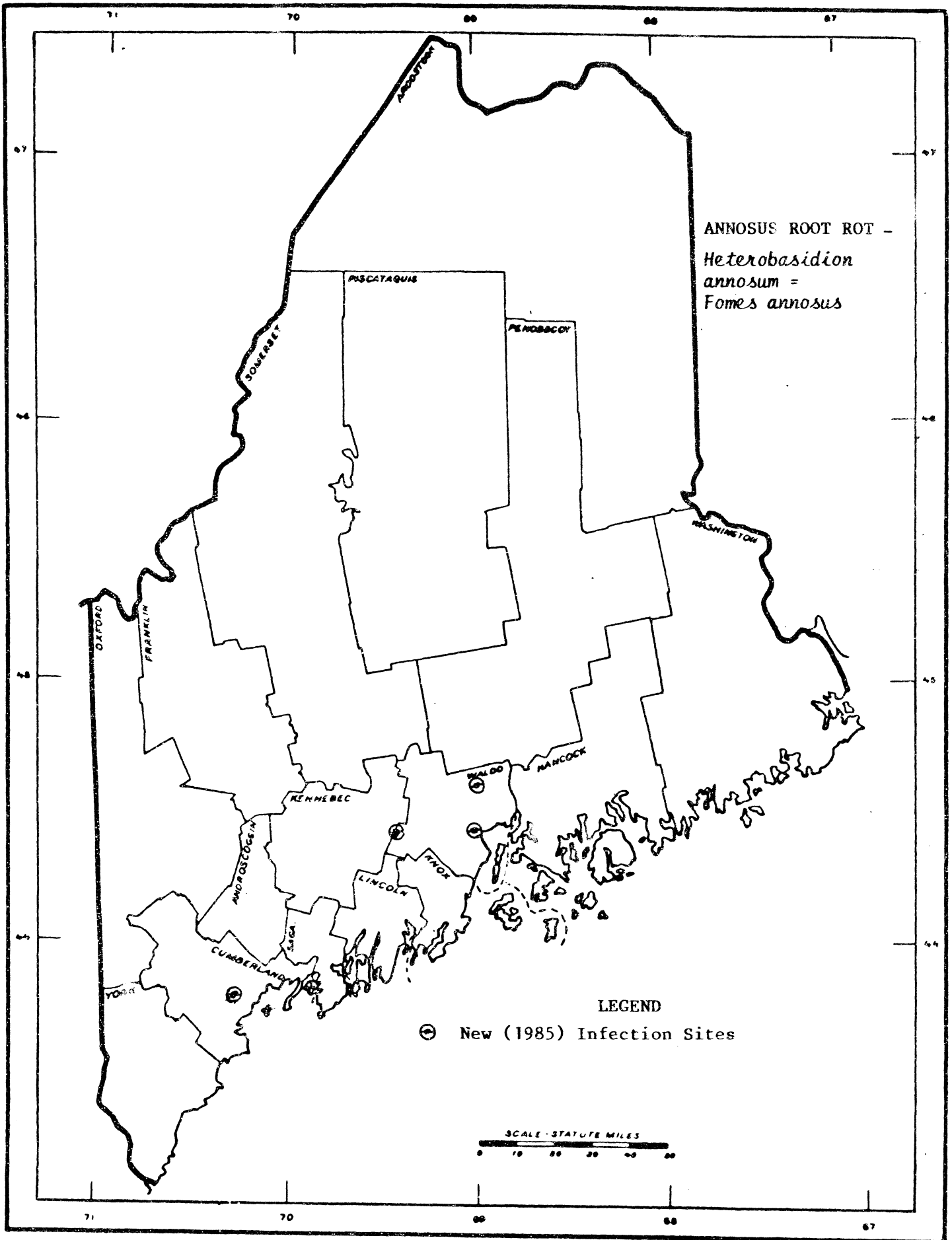
Lachnellula calyciformis - Although very similar in appearance to the European Larch Canker, this organism has very small apothecia, and ascospores which are smaller in size than those of *L. willkommii*. Apparently it is of uncommon occurrence on Eastern larch, but was collected on this species in both Brunswick and Freeport.

Chestnut Blight, *Endothia parasitica* - Propane torch canker excision was tested on several trees with poor success; however, the idea deserves further testing. It has several advantages over chisel excision.

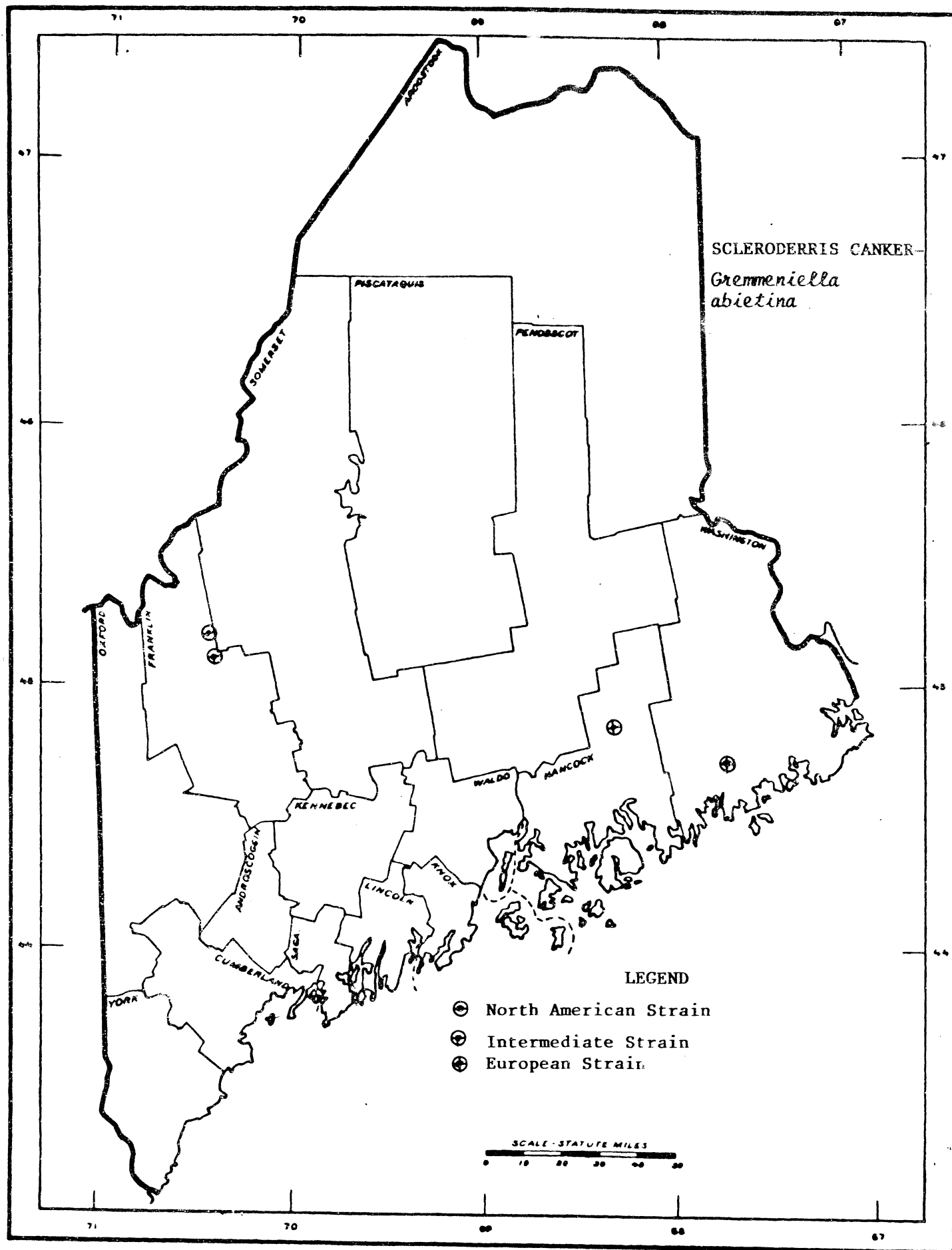
Yellow Witches' Broom of Fir, *Melampsorella cerastii* - Although a problem in only a few balsam fir Christmas tree plantations, incidence and severity of attack caused substantial degrade in one Dover-Foxcroft plantation.

White Pine Needle Blight (SNB) - The most severe symptoms observed in several years were evident statewide, although most noticeable areas appeared to be from the Belfast-Farmington-Bethel area south. An estimated 15% of trees in these areas were generally affected. Androscoggin, Cumberland, Lincoln, and Kennebec Counties contained some of the more symptomatic trees.

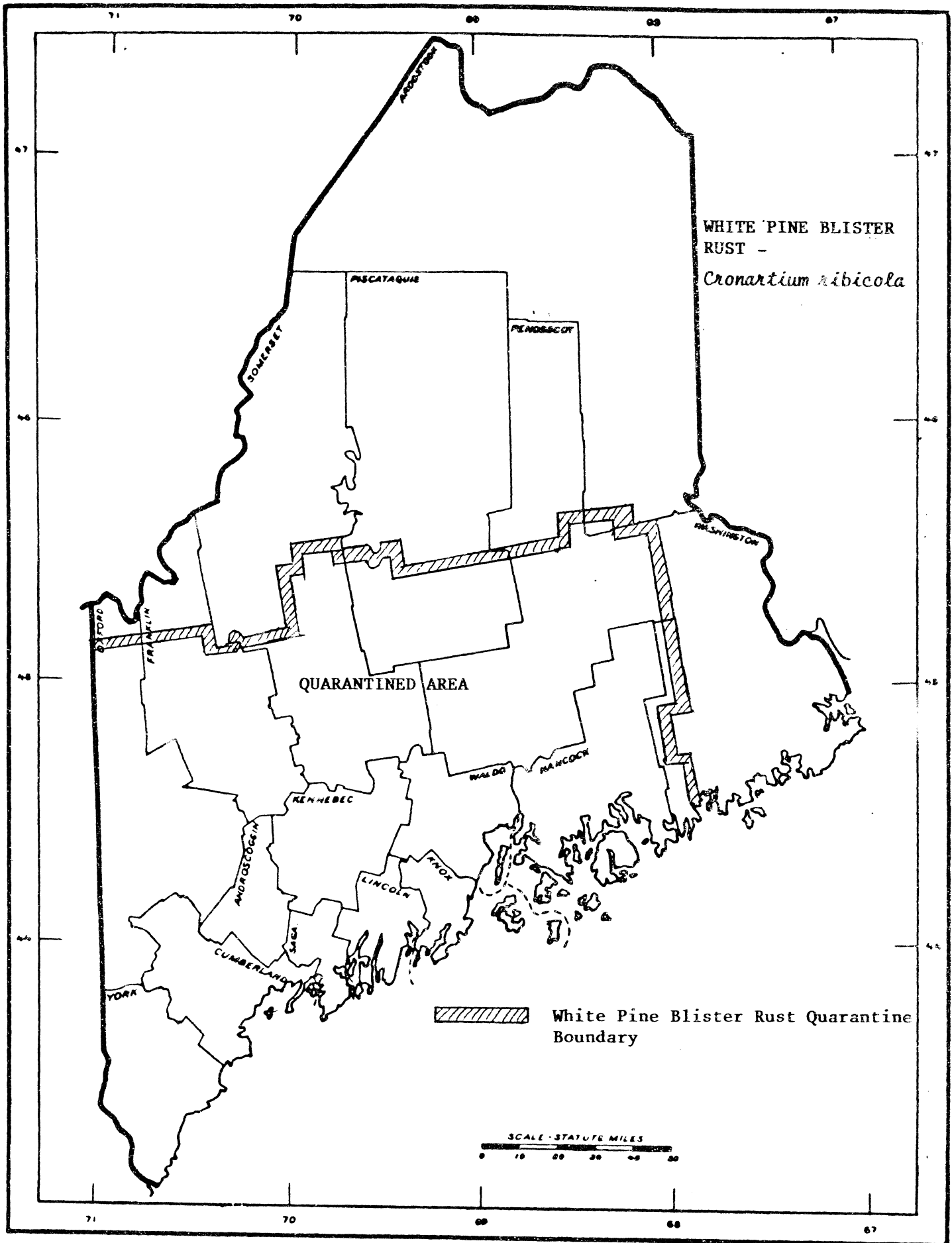
MAINE

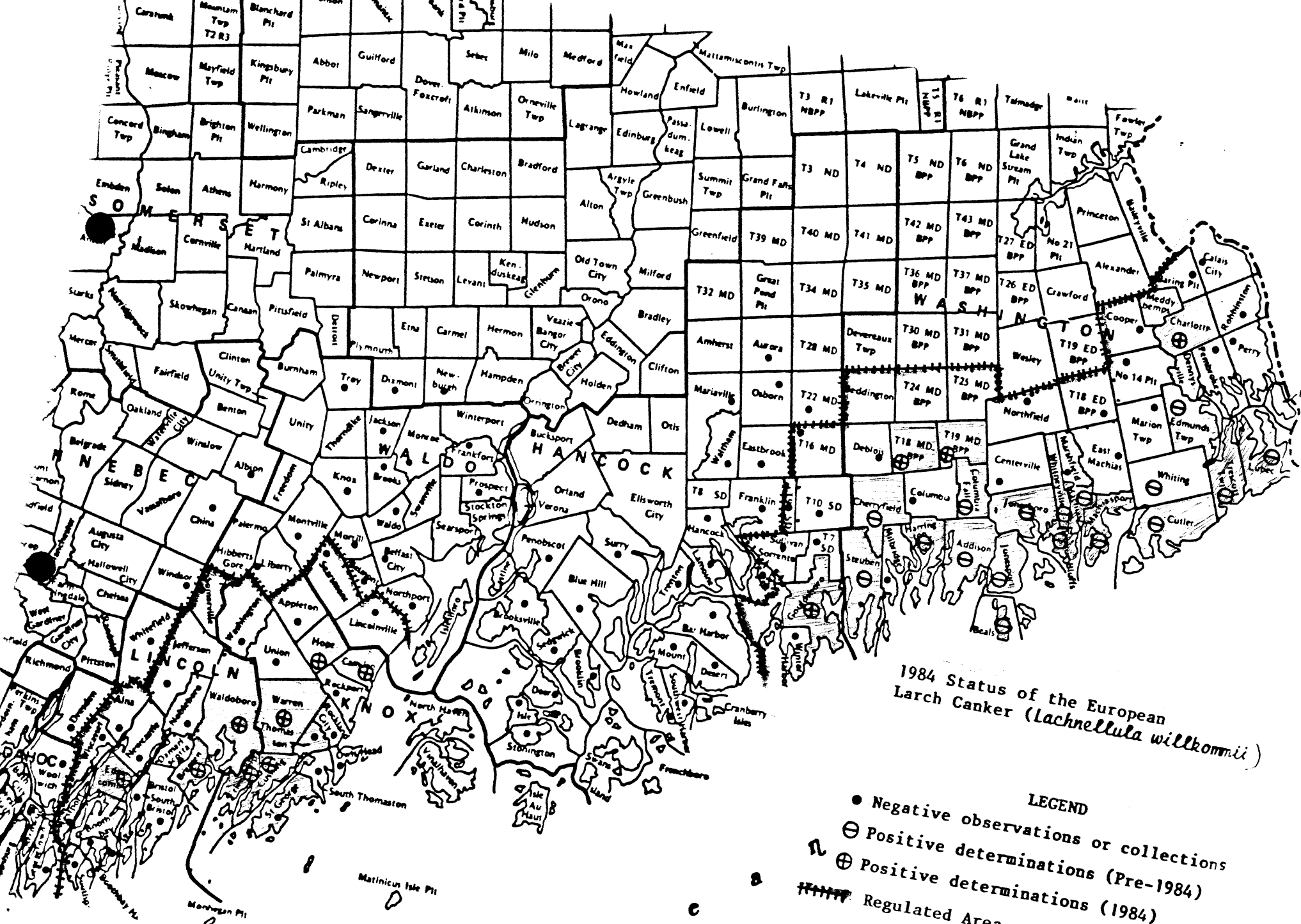


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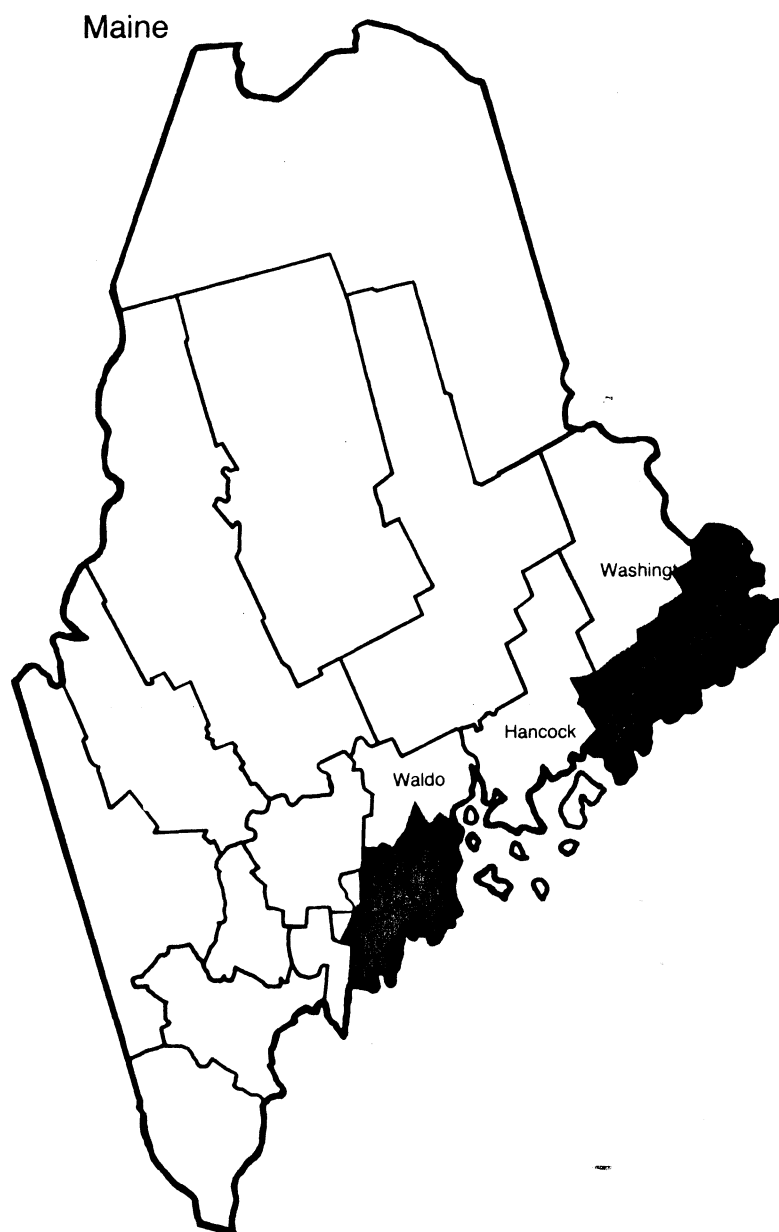


1984 Status of the European
Larch Canker (*Lachnellula willkommii*)

LEGEND

- Negative observations or collections
- ⊙ Positive determinations (Pre-1984)
- ⊕ Positive determinations (1984)
- ▨ Regulated Area as of February 20, 1985

European Larch Canker Quarantine



 Regulated Area—
State and Federal Regulations

Restrictions are imposed on movement of regulated articles from red into or through white.

Consult your State and Federal plant protection inspector or your county agent for assistance regarding exact areas under regulation and requirements for moving regulated articles. For detailed information see 7 CFR 301.91 for quarantine and regulations.

The following Regulated Articles require a Certificate or Permit for movement:

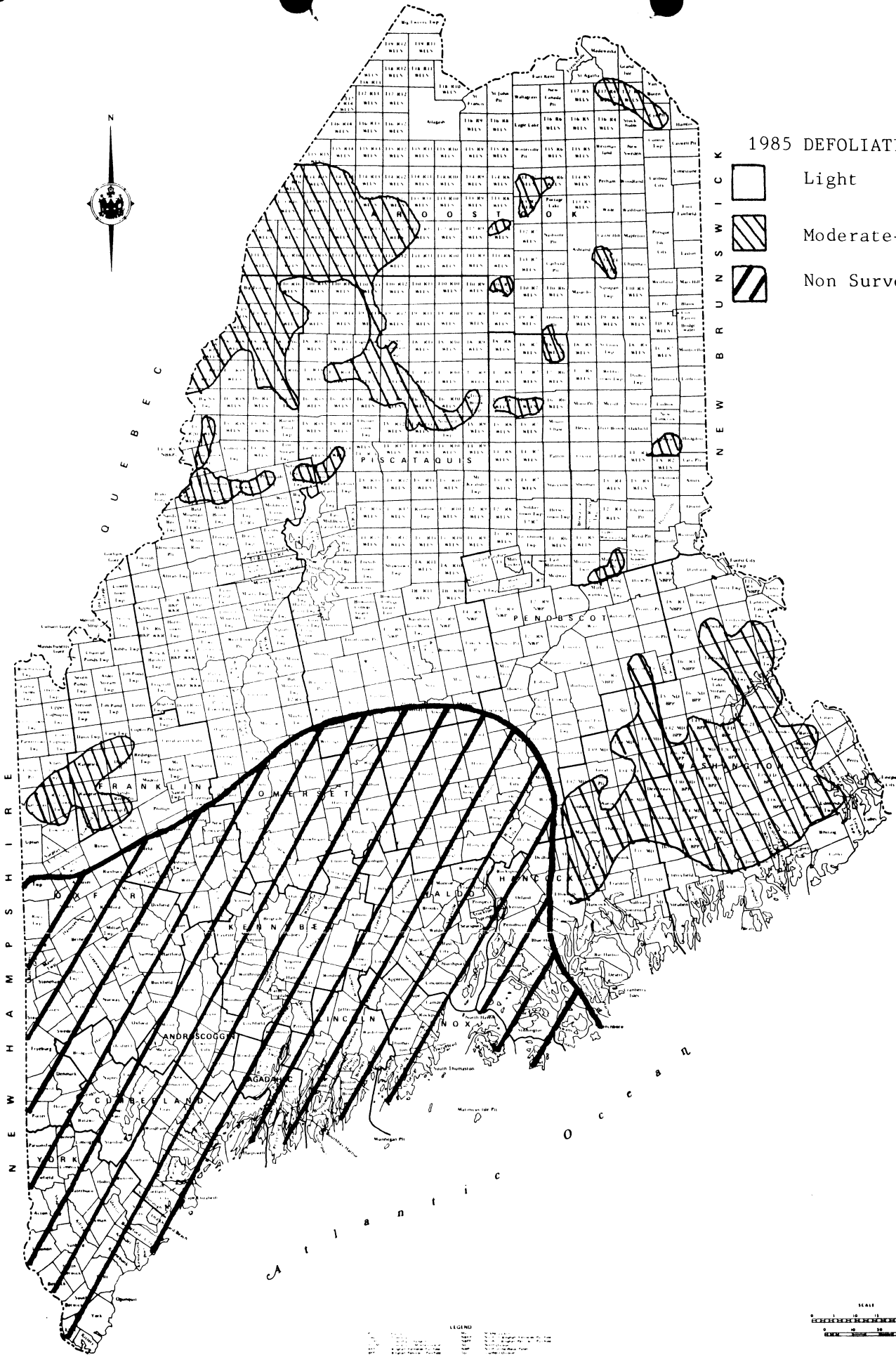
1. Logs, pulpwood, branches, twigs, plants, scions, and other propagative material of *Larix* (larch) and *Pseudolarix* (golden larch) spp.
2. Any other product, article, or means of conveyance, of any character whatsoever, not covered by the above when it is determined by an inspector that it presents a risk of spread of European larch canker and the person in possession thereof has actual notice that the product, article or means of conveyance is subject to the restrictions in the quarantine and regulations.

1985 DEFOLIATION MAP

Light

Moderate-Severe

Non Survey Area



LEGEND

SCALE
0 10 20 30 Miles
0 10 20 30 Kilometers

MAINE

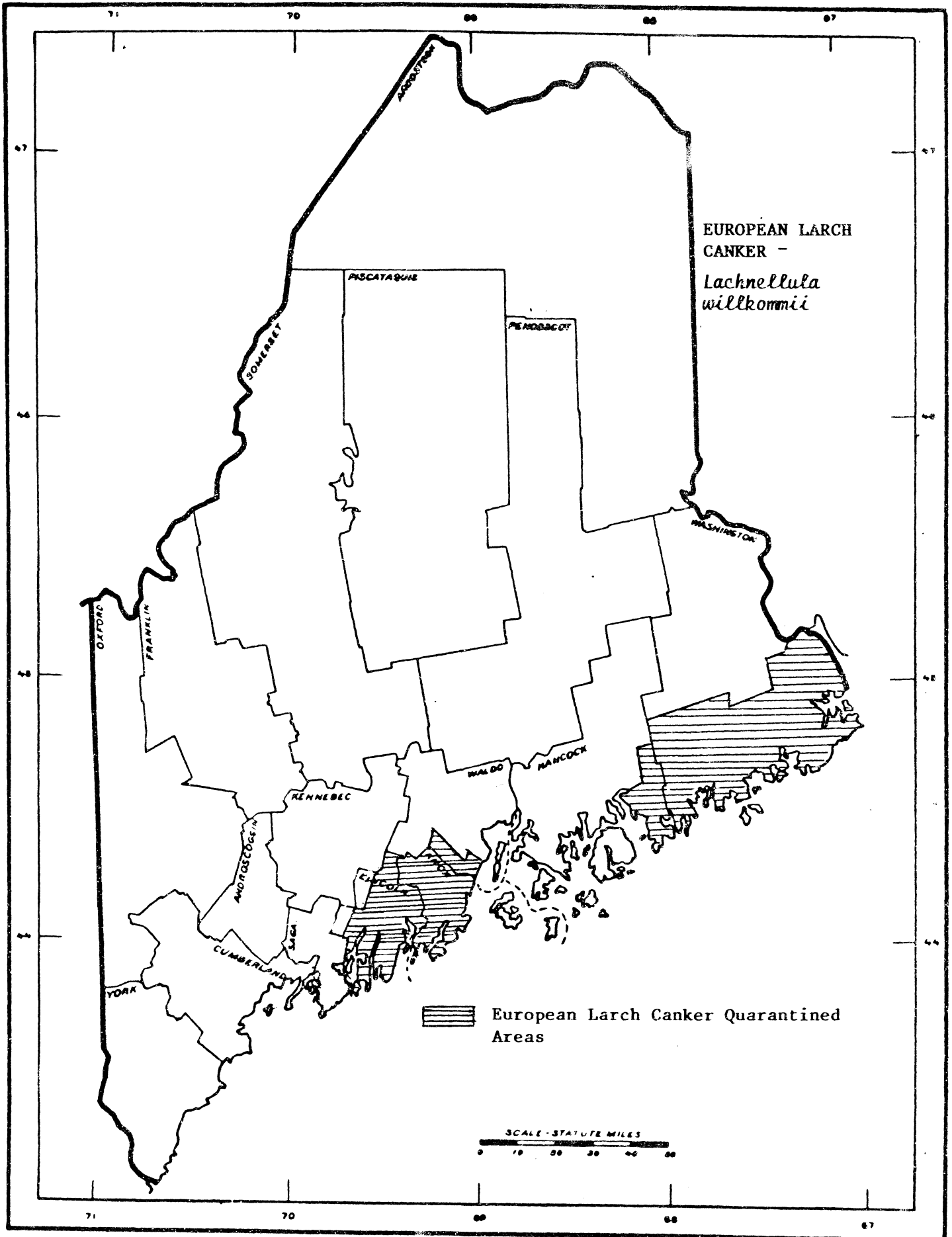
EUROPEAN LARCH CANKER -

*Lachnellula
willkommii*

 European Larch Canker Quarantined
Areas

SCALE - STATUTE MILES

0 10 20 30 40 50



To: Pete Rush

From: Margaret Miller-Weeks

★ Correction for MAINE Gypsy Moth info.

years cumulative heavy defol

		0	1	2	3	4
Avg %	1984	.4	2.6	13.7	13.5	14.8
Oak BA dead	1985	1.8	2.6	15.1	14.0	17.0

Also enclosed: Anthracnose of Dogwood in NY. also
important in Connecticut.

Also enclosed. 1984 Nat. ~~E~~ Conditions Rept. (NA section) -
(as requested) which I submitted to the WO last year